SFI FOUNDATION INC.™

QUALITY ASSURANCE SPECIFICATIONS™

SFI SPECIFICATION 6.4 EFFECTIVE: MAY 13, 2026*

PRODUCT: Puller and Diesel Drag Racing Bellhousing

1.0 GENERAL INFORMATION

1.1 This SFI Specification establishes uniform test procedures and minimum standards for evaluating and determining performance capabilities for Puller and Diesel Drag Racing bellhousings by individuals engaged in competitive motorsports.

1.2 The procedures, test evaluations and standards contained herein, are intended only as minimum guidelines for construction and evaluation of products. Certification that products meet such minimum standards is made by the product manufacturer and products are not certified, endorsed or approved by SFI under this program.

1.3 Use of the "This Manufacturer Certifies That This Product Meets SFI Specification 6.4" logo/designation, the authorized artwork style, or conventional lettering by a manufacturer, on a subject product, is intended only to indicate that the manufacturer of the product has represented that they have submitted the product to the recommended tests, with positive results, in compliance with the standards established herein.

1.4 This SFI Specification requires a demonstration that the product of a manufacturer meets or exceeds the requirements when the manufacturer enters the program; and on a periodic basis thereafter. Any manufacturer may participate in the program by providing Puller and Diesel Drag Racing Bellhousings that meet or exceed SFI Specification 6.4 test standards, by complying with the requirements of the SFI Specification 6.4 program, and by signing a licensing agreement with the SFI Foundation, Inc.

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1.5 Compliance with this specification is entirely voluntary. However, when a manufacturer provides Puller and Diesel Drag Racing Bellhousings in compliance with all requirements of SFI Specification 6.4 and enters into the licensing agreement with the SFI Foundation, Inc., they may certify that compliance with such standards is in accordance with the guidelines established herein.

1.6 Manufacturers wishing to participate in the program, in addition to the other requirements of this specification, must label each of their products with the manufacturer's name, trademark or symbol as well as the date of manufacture of the product. Motor plates must also display the manufacturer's name, trademark, or symbol.

1.7 No manufacturer may display the SFI logo/designation on their product unless the manufacturer has signed a licensing agreement with SFI and has successfully complied with all the requirements of this specification and the self-certification program.

2.0 DEFINITIONS

2.1 Puller and Diesel Drag Racing bellhousings shall connect the engine block to the continuing driveline (i.e. transmission or differential) and encase the applicable clutch assembly. The bellhousing shall be designed to absorb and contain a flywheel and/or clutch explosion as defined in this specification.

2.2 Puller and Diesel Drag Racing bellhousings shall be inspected for recertification at least every five years after the date of original certification or as specified by the certifying manufacturer. When a unit is determined to be acceptable for continued service, a new conformance label marked with the inspection date shall be used.

2.3 Any bellhousing pertaining to this specification shall remain as constructed by the original manufacturer and not modified. If a bellhousing is tested to this specification with the addition of a liner or liners, then the product must be sold and certified in that configuration. The liner(s) must be flush with the flange/mounting surface of the bellhousing. Steel and titanium are the current acceptable materials, and the use of any other material must be reviewed by the committee for consideration.

2.4 Motor plates, fastening methods, and fasteners must be supplied or specified by the manufacturer.

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3.0 CONSTRUCTION

Puller and Diesel Drag Racing bellhousings must be constructed of steel or titanium.

3.1 ATTACHMENT

3.1.A. COMPONENT TRACTORS, DIESEL 4x4 TRUCKS, and DIESEL DRAG RACING

There shall be a minimum of seven (7) 3/8" (10mm) diameter Grade 8 fasteners or better, clearly marked, in the top half (180°) of the bellhousing, and a minimum of eight (8) 3/8" (10mm) diameter Grade 8 fasteners or better, clearly marked, in the bottom half (180°) of the bellhousing and a minimum of four (4) 1/2" (12.7mm) studs, one in each quadrant, used to attach the bellhousing to the block/motor plate. Studs and nuts must be supplied by the certifying manufacturer and clearly marked. The bottom two holes cannot exceed 7 inches centerline to centerline. No bellhousing mounting bolts may be threaded into a motor plate / adapter. Attachment bolts not threaded into the engine block must have a flat head countersunk into backside of motor plate / adapter and pass through from block side of motor plate / adapter and retain the bellhousing with equal grade nut and washer.

3.1.B. AUTOMOTIVE BLOCKS

There shall be a minimum of seven (7) 3/8" (10mm) diameter Grade 8 fasteners or better, clearly marked, in the top half (180°) of the bellhousing, and a minimum of eight (8) 3/8" (10mm) diameter Grade 8 fasteners or better, clearly marked, in the bottom half (180°) of the bellhousing and a minimum of four (4) 1/2" (12.7mm) studs, one in each quadrant, used to attach the bellhousing to the block/motor plate. Studs and nuts must be supplied by the certifying manufacturer and clearly marked. The bottom two holes cannot exceed 7 inches centerline to centerline. All bellhousing mounting fasteners must engage a thread depth in steel at least equal to the nominal diameter of the fastener, or a thread depth at least equal to 2 times the nominal diameter in cast iron and nonferrous structures.

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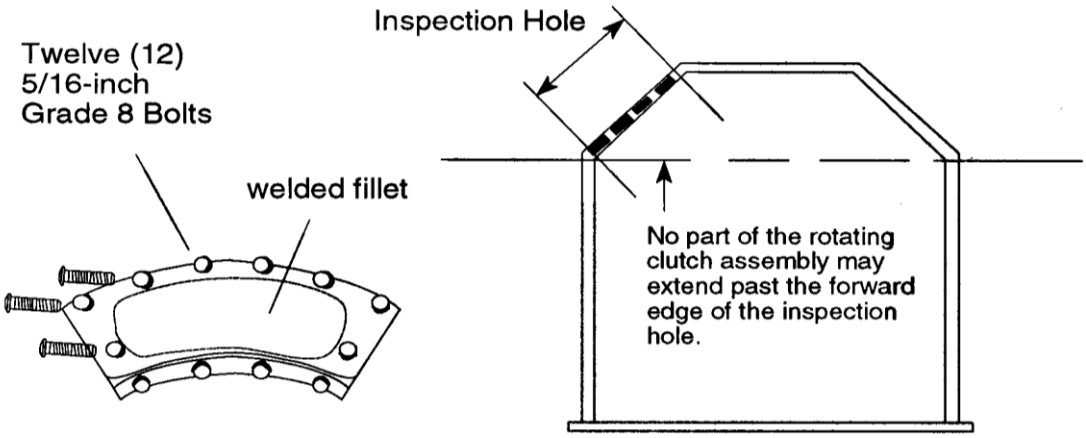
3.2 INSPECTION COVER OPENING

One (1) hole may be cut, no longer than 8 1/2 inches (21.6cm) or 90° of the circumference (whichever is smaller) in length. The opening may not be cut past the plane of the rotating clutch assembly. A cover, that fits the cut out opening, shall be made of the same material and thickness as the bellhousing with a welded fillet plate. A minimum of twelve (12) 5/16" (8mm) Grade 8 bolts or better, clearly marked, shall secure the cover in place. The fillet plate may be retained to the cover with a minimum of six (6) .250 inch diameter rivets of the same material as the cover.



INSPECTION COVER

3.3 ADJUSTMENT SLOT

One (1) clutch adjustment slot may be cut into the barrel of the bellhousing and liner (if applicable) not to exceed 1/2 inch (12.7mm) in width and 2 3/4 inches (70mm) in length. A cover, that fits the cut out opening, shall be made of the same material and thickness as the bellhousing with a welded fillet plate. A minimum of six (6) 5/16" (8mm) Grade 8 bolts or better, clearly marked, shall secure the cover in place. The fillet place may be retained to the cover with a minimum of two (2) .250 inch diameter rivets of the same material as the cover.

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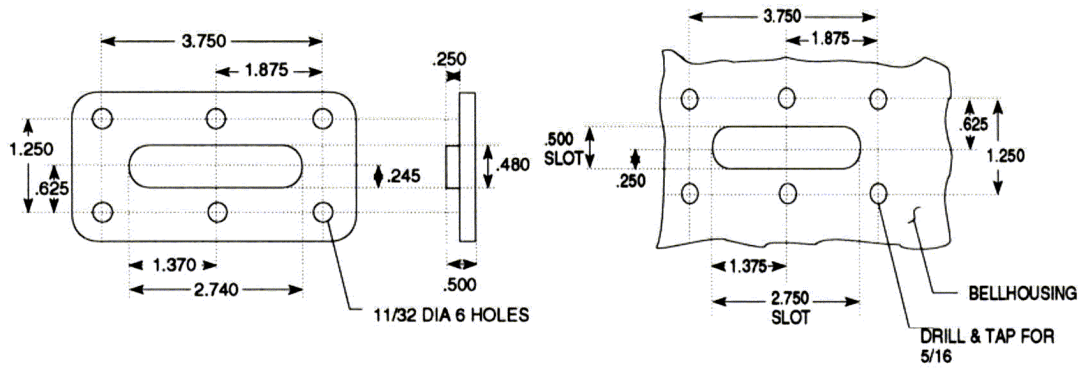
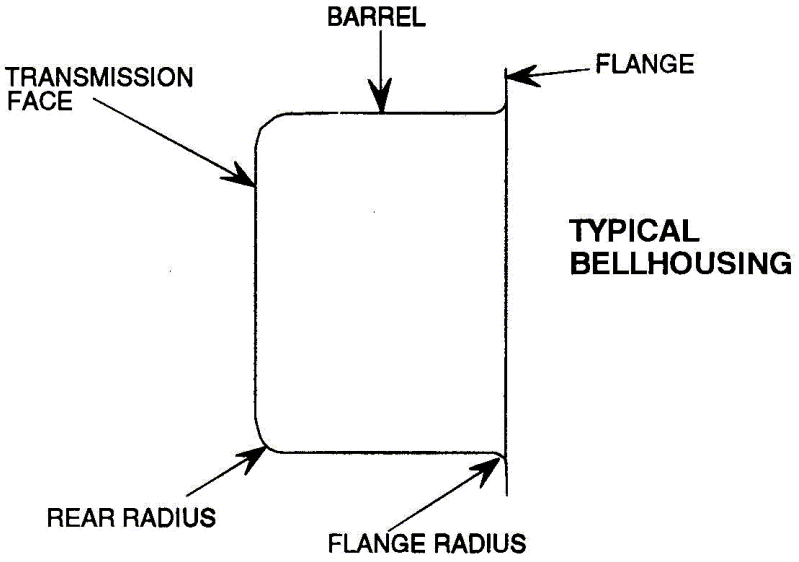


INSPECTION SLOT COVER



TYPICAL BELLHOUSING

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3.4 TRANSMISSION BOSSES

Bosses 1/2 inch (12.7mm) thick must be used to secure the transmission or drive mechanism to the rear of the bellhousing. The bosses must be welded, or otherwise secured inside the back face of the bellhousing.

3.5 VENT HOLE

One (1), 2 inch (50.8mm) diameter maximum, vent hole may be installed by the certifying manufacturer. The vent hole must be located in the rear radius of the bellhousing. Location of the vent hole in the barrel of the bellhousing is not allowed.

3.6 STARTER POCKET

The use of no more than a single starter pocket is allowed. Any starter pocket must be installed by the certifying manufacturer and must be formed or welded on only. Starter pocket may not be bolted on or left open.

3.7 MOTOR PLATE / ADAPTER REQUIREMENTS FOR USE

Although MOTOR PLATE / ADAPTER REQUIREMENTS FOR USE are defined by this specification, the MOTOR PLATE / ADAPTER is not required by this specification to be included in the bellhousing manufacturer's certification. Bellhousing manufacturers may at their discretion make additional requirements for use of their product in addition to those listed in this specification. (e.g., an adapter plate from the same manufacturer)

3.7.A. WITH COMPONENT TRACTORS, DIESEL 4x4 TRUCKS, or for DIESEL DRAG RACING

Bellhousings certified to this specification must be used with a full, one-piece motor plate or adapter at the rear of the engine block and conforming to the following and all other requirements outside of 3.7.B.: The center hole opening diameter in the plate must not be more than one inch larger than the crankshaft flange. The motor plate must be constructed of minimum 3/16" (4.8mm) thickness steel, or if aluminum, the motor / adapter plate must be a minimum ¾" up to maximum 1 ¼" thick. The motor plate / adapter must extend at least ¼" beyond any point on the bellhousing flange OD. Any step or added bellhousing effective depth crated by an aluminum plate or adapter must be covered by a minimum 1/8" thick steel bellhousing liner extending from the bellhousing into the recess.

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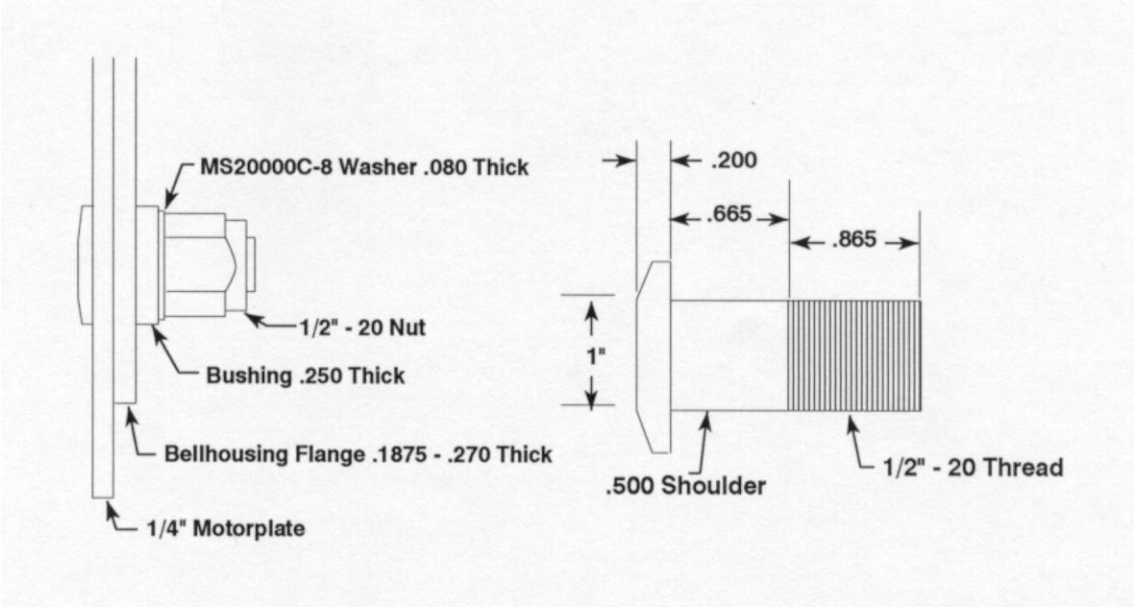
3.7.B. WITH AUTOMOTIVE BLOCKS

Bellhousings certified to this specification must be used with a full, one-piece motor plate at the rear of the engine block and conforming to the following and all other requirements outside of 3.7.A.: The center hole opening diameter in the plate must not be more than one inch larger than the crankshaft flange. The motor plate must be constructed of 3/16" (4.8mm) steel or 1/4" (6.4mm) 6061-T6, 7075-T6 or 2024-T3 wrought heat treated aluminum alloy plate (no cast tooling plate). Any step or added bellhousing effective depth crated by an aluminum plate or adapter must be covered by a minimum 1/8” thick steel bellhousing liner extending from the bellhousing into the recess.



3.8 MOTOR PLATE STUDS

3.8.A. MOTOR PLATE STUD (If using 1/2", 12.7mm)

The motor plate stud (1/2", 12.7mm) must be a minimum of Grade 5 and fabricated per the drawing above. Certification of mechanical properties and identification of the stud manufacturer must be on file with SFI. The stud hole must have a 1/4 inch (6.4mm) thick bushing, tack welded to the bellhousing flange with a minimum outer diameter of 3/4 inch (19mm).

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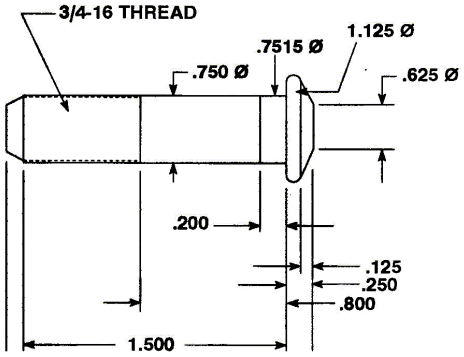

MOTOR PLATE STUD

3.8.B. MOTOR PLATE STUD (If using 3/4", 19mm)

The motor plate stud must be a minimum of Grade 5 and fabricated per the drawing above. Certification of mechanical properties and identification of the stud manufacturer must be on file with SFI. The stud hole must have a 1/4 inch (6.4mm) thick bushing, tack welded to the bellhousing flange with a minimum outer diameter of 1 1/4 inch (31.8mm).

3.9 SCALLOPING

Scalloping of the bellhousing flange and covers must be done by the certifying manufacturer at the time of manufacture. When a certifying manufacturer offers a scalloped flange/cover the bellhousing must be tested in the worst-case condition. There must be at least 1-1/2 times the bolt hole diameter around each attaching hole. When the flange is trimmed there must be at least 1/4 inch (6.4mm) of flange material remaining before the radius into the barrel. The covers must have at least one (1) bolt hole diameter around each attaching hole and the openings in the bellhousing must be overlapped by at least 1/4 inch (6.4mm) of material.

3.10 FORK OPENING

The use of a fork opening is prohibited.

4.0 MODEL CLASSIFICATION

The major factors for model determination are materials, material thickness, increase in depth and inside radial dimensions. A variation of any of these parameters is considered a model change and must be tested.

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5.0 TESTING

The test samples shall be fully processed new bellhousings which are representative of bellhousings currently produced or to be produced. For initial design validation, three (3) bellhousings shall be tested. For periodic revalidation, one (1) bellhousing shall be tested. All necessary mounting hardware along with mounting instructions shall be supplied by the certifying manufacturer and used/followed by the test lab for installation/mounting in the test fixture.

Note: After the initial design validation criteria has been met (testing and passing three (3) different bellhousings) any current participating manufacturer, using that same established manufacturing process, may increase depth, and test one (1) bellhousing to validate that design.

5.1 EXPLOSION CONTAINMENT

5.1.1 SAMPLES

For a given model, the bellhousing version with the greatest depth and starter pocket (if offered) shall be tested. If the sample does have a starter pocket, it can be tested with an insert in the pocket to simulate a starter.

5.1.2 APPARATUS

A. FLYWHEEL

A 13-inch (33cm) diameter, 30 pound (13.6kg) or equivalent energy steel flywheel with ring gear shall be used. The flywheel shall be modified to explode (in six (6) pieces of approximate equal size) between 9,000 and 10,000 revolutions per minute {rpm}.

B. TACHOMETER

A tachometer with an accuracy of ±2% at 9,500 rpm shall be used.

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C. TEST FIXTURE

The test fixture shall have a mounting surface that resembles the rear of an engine block. The fixture shall also have a shaft located at the crankshaft position capable of being driven at the test speed. The shaft shall have a flange that will accept the test flywheel. The speed of the shaft shall be measured by the tachometer. The transmission opening must be covered during testing.

5.1.3 PROCEDURES

The flywheel shall be mounted on the shaft flange with a spacer that inserts the flywheel one (1) inch (25.4mm) inside the bellhousing away from the flange area. The bellhousing shall then be mounted to the fixture as it would be mounted in service using the proper size and number of fasteners as designated by the certifying manufacturer. The flywheel shall be driven to a speed between 9,000 and 10,000 rpm until it explodes inside the bellhousing.

5.1.4 INSPECTION

Inspect the bellhousing for signs of fragment penetration or escape.

6.0 PROOF OF COMPLIANCE

Containment Bellhousing manufacturers are required to provide the following information to enroll in this program:

6.1 TEST RESULTS

Test results shall be documented in a test report.

6.1.1 EXPLOSION CONTAINMENT

The bellhousing shall be considered acceptable if it contains all of the explosion fragments and remains attached to the wall of the test fixture. Any fragments that escape through dust holes shall not be cause for failure. For initial design validation, all three bellhousings must pass.

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7.0 TEST REPORTS

A separate test report, or set of test reports if required, shall be submitted for each product model. If more than one test facility is required to complete all necessary tests, then a separate test report shall be submitted from each one. A test report shall be submitted for each component, if tested separately. The test facility shall assign a unique number to each test report. This number along with the report date and page number shall appear on each page. Each test report shall include:

7.1 RELEVANT INFORMATION

7.1.1 Manufacturer's name, contact name, address and telephone number.

7.1.2 Name, address and telephone number of the test facility.

7.1.3 Name and signature of the responsible test supervisor.

7.1.4 Actual date of the test.

7.1.5 Specification number and effective date.

7.1.6 Product name, description and model designation.

7.1.7 Component name and description.

7.1.8 Accompanied by a "Before" and "After" photo

7.2 TESTS

Each test conducted shall be listed showing the test name, apparatus used, procedure used, and test results obtained along with any other appropriate information.

7.3 AUTHENTICATION

Test reports shall be authenticated and stamped by a Professional Engineer who is registered in the state in which the testing is conducted. If necessary, SFI may allow an equivalent entity to provide authentication.

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8.0 INITIAL DESIGN VALIDATION

To receive initial recognition from SFI as a participant in the SFI Specification 6.4 Program, the manufacturer must submit to SFI all information delineated in the Proof of Compliance section. This information shall be provided for each Puller and Diesel Drag Racing Bellhousing model offered by the applicant that is to be included in the program. Any change in design, material and/or methods of manufacturing not specifically excluded is considered a model change and, therefore, requires initial design validation.

Note: A model certification is based on a successful test of a bellhousing with the greatest depth. A bellhousing variation shall not be considered certified under this model if it is later produced with greater depth, increased thickness, or a change of inside radial dimensions unless that bellhousing is also successfully tested.

9.0 PERIODIC REVALIDATION

Test reports with successful test results must be submitted to SFI at least once every 24-month period following the date of the initial design validation test for each model of 6.4 Bellhousing manufactured by the participant. After the second retest cycle following the initial design validation test (a total of three test occurrences), successful test results must be submitted to SFI at least once every 48 months. If multiple test reports are required to obtain all test results, then the earliest test date shall be used to determine when the periodic revalidation reports are due.

10.0 CERTIFICATION OF COMPLIANCE

Upon demonstration of successful compliance with all requirements of the specification, the self-certification program and upon entering into the licensing agreement with SFI, the manufacturer may advertise, present, and offer the Puller and Diesel Drag Racing Bellhousings for sale with the representation that their product meets SFI Specification 6.4. Continuing certification is contingent upon the following additional considerations: (1) the product shall be resubmitted for testing following any change in design, material and/or methods of manufacturing not specifically excluded, (2) periodic revalidation test reports are submitted when due to SFI.

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11.0 CONFORMANCE LABELS

The conformance label is a punch out sticker which shall be placed on the top outer surface of the bellhousing. Holes (1/8" (3.2mm) diameter) shall be punched in each sticker indicating the month and year the containment bellhousing is manufactured/recertified. Besides placing the label on the part, the serial number of the label along with the date shall be permanently marked on the bellhousing. The permanently marked information should be in the same location as the conformance label. For periodic inspection, the old label shall be removed, and the foregoing procedure shall be followed using a new label. The serial number should appear on the customer invoice to aid in identification and tracking.

12.0 DECERTIFICATION

Participating manufacturers are subject to decertification when not in compliance with the guidelines of this program or when their products do not conform with the requirements of this specification. Decertification will provide SFI the right to affect any and all remedies which are available to SFI in the licensing agreement.

13.0 APPEAL PROCEDURE

In the event of decertification, the manufacturer is entitled to an appeal of the decision of SFI. Requests for appeal must be received by SFI no later than thirty days following receipt of the notice of decertification. Appeals of such decisions will be heard at the next meeting of the SFI Board of Directors.

14.0 STATEMENT OF LIMITATIONS

Testing procedures and/or standards contained in this specification are intended for use only as a guide in determining compliance with the minimum performance requirements as defined herein. The granting and assignment of the "This Manufacturer Certifies That This Product Meets SFI Specification 6.4" logo/designation is in no way an endorsement or certification of product performance or reliability by SFI. SFI, its officers, directors and/or members assume no responsibility, legal or otherwise, for failure or malfunctions of a product under this program.

15.0 COSTS

All costs involved in this program will be absorbed by the submitting manufacturer.

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16.0 COMPLIANCE PERIOD

As this specification is revised to reflect changes in technology and/or field conditions, to remain current, participating manufacturers in the SFI Specification 6.4, Puller and Diesel Drag Racing Bellhousing, Program, must demonstrate full compliance with the requirements of this specification within ninety (90) days of the latest effective date.

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*	Draft:	January 12, 2022
	Draft 2:	February 23, 2022
	Draft 3:	April 19, 2022
	Draft 4:	August 30, 2022
	Draft 5:	December 15, 2022
	Initial:	July 24, 2023
	Reviewed:	December 7, 2023
	Revised:	May 5, 2024
	Reviewed:	December 11, 2025
	Revised:	May 13, 2026

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